

THE EFFECTS OF POLYACRYLAMIDE (PAM) ON WEED SEED AND HERBICIDE MOVEMENT IN FURROW IRRIGATED DRY BEANS.

Matthew J. West¹, Don Morishita¹, Pamela J.S. Hutchinson² and Robert E. Sojka³.
Graduate Research Assistant, Associate Professor, Assistant Professor and Soil Scientist.
¹Department of Plant, Soil, and Entomological Sciences, University of Idaho, Twin Falls ID 83303, ²Department of Plant Soil and Entomological Sciences, University of Idaho, Aberdeen ID 83210 and ³USDA-ARS, Kimberly ID 83341.

Abstract. Polyacrylamide (PAM) is being adopted in surface irrigated areas as a means of reducing irrigation induced erosion by preventing shear detachment of soil and by flocculating fine clay sized particles that do detach. The influence of PAM in irrigation water on weed seed and soil-applied herbicide movement is unknown. Field studies were established in 2000 and 2001 near Kimberly, Idaho to determine the effect of PAM on 1) the transport of two herbicides: ethalfluralin and dimethenamid-p ($K_{oc} = 4,000$ and 155 ml/g, respectively) in irrigation run-off and 2) weed seed migration in irrigation run-off. Water samples were taken during each irrigation and analyzed for herbicide concentration using gas chromatography and mass spectroscopy. Weed seeds were collected continuously from the irrigation run-off to determine total weed seed migration as influenced by PAM. Polyacrylamide-treated irrigation water reduced ethalfluralin concentration in run-off water compared to run-off water without PAM. Dimethenamid-p concentration in irrigation water was not affected by the addition of PAM. Broadleaf weed seed migration in irrigation run-off was reduced 34 to 95%, 84 to 99% and 61 to 98% in ethalfluralin, dimethenamid-p, and untreated control herbicide treatments, respectively, when PAM was added to the irrigation water compared to untreated irrigation water. Grass weed seed migration in irrigation run-off was reduced 26 to 99%, 70 to 99%, and 97 to 99% in ethalfluralin, dimethenamid-p, and untreated control herbicide treatments, respectively, when PAM was added to the irrigation water compared to untreated irrigation water.

Matt West

Currently working as a bilingual inspector for the Washington State Department of Agriculture's (WSDA) Pesticide Compliance branch located in Wenatchee. Received an Associates degree from Rick's College in Crop and Soil Science, a B.S. degree in Plant Science from the University of Idaho, and currently finishing a M.S. degree in Plant Science, with an emphasis in Weed Science from the University of Idaho.

University of Idaho Kimberly Research and Extension Center
3793 North 3600 East, Kimberly ID 83341 Phone: 208-423-4691 Fax: 208-423-6559
Don Morishita, Superintendent, Kimberly Research and Extension Center. Liaison between UI and agricultural interests and interactive cooperation between US Department of Agriculture (USDA) and UI employees, don@uidaho.edu

Washington State Department of Agriculture
1505 N. Miller St, Suite 140, Wenatchee, WA 98801-1569
Toll-free: 1-877-301-4555
fax 509-664-3170
e-mail: mwest@agr.wa.gov